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Grade: Technical.  
Use: Dye synthesis.

**acenocoumarin.** (3-( $\alpha$ -acetyl-4-nitrobenzyl)-4-hydroxycoumarin).  $C_{19}H_{15}NO_6$ .

Properties: White, crystalline powder; tasteless and odorless; mp 197°C. Slightly soluble in water and organic solvents.

Use: Medicine (anticoagulant).

**acephate.** (acetylphosphoramidothioic acid ester). CAS: 30560-19-1.  $C_4H_{10}NO_3PS$ .

Properties: White crystals; mp 65°C; soluble in water; slightly soluble in acetone and alcohol.

Hazard: Moderately toxic by ingestion.

Use: Insecticide.

**ACerS.** See American Ceramic Society.

**acetadol.** See aldol.

**acetal.** (diethylacetal; 1,1-diethoxyethane; ethylenediacetal). CAS: 105-57-7.  $CH_3CH(OC_2H_5)_2$ .

Properties: Colorless, volatile liquid; agreeable odor; nutty aftertaste. Stable to alkalis, but readily decomposed by dilute acids. Forms a constant-boiling mixture with ethanol. Soluble in alcohol, ether, and water. D 0.831; bp 103-104°C; vap press 20.0 mm Hg (20°C); flash p - 5F (CC) (-20.5°C); specific heat 0.520; refr index 1.38193 (20°C); wt (lb/gal) 6.89; autoign temperature 446F (230C).

Derivation: Partial oxidation of ethanol, the acetaldehyde first formed condensing with the alcohol.

Grades: Technical.

Hazard: Highly flammable. Dangerous fire risk.

Explosive limits in air 1.65 to 10.4%. Moderately toxic and narcotic in high concentrations.

Use: Solvent; cosmetics; organic synthesis; perfumes; flavors.

See also acetal resin.

**acetaldehyde.** (acetic aldehyde; aldehyde; ethanal; ethyl aldehyde). CAS: 75-07-0.  $CH_3CHO$ .

Properties: Colorless liquid; pungent, fruity odor. D 0.783 (18/4C); bp 20.2C; mp - 123.5C; vap press 740.0 mm Hg (20C); flash p - 40F (-40C) (OC); specific heat 0.650; refr index 1.3316 (20C); wt 6.50 lb/gal (20C); miscible with water, alcohol, ether, benzene, gasoline, solvent naphtha, toluene, xylene, turpentine, and acetone.

Derivation: (a) Oxidation of ethylene; (b) vapor phase oxidation of ethanol; (c) vapor-phase oxidation of propane and butane; (d) catalytic reaction of acetylene and water (chiefly in Germany).

Grade: Technical 99%.

Hazard: Highly flammable; toxic (narcotic). Dangerous fire, explosion risk. Explosive limits in air 4-57%. TLV: 100 ppm in air.

Use: Manufacture of acetic acid and acetic anhydride, n-butanol, 2-ethylhexanol, peracetic acid, aldol, pentaerythritol, pyridines, chloral, 1,3-butylene glycol, and trimethylolpropane; synthetic flavors.

**acetaldehyde ammonia.** See aldehyde ammonia.

**acetaldehyde cyanohydrin.** See lactonitrile.

**acetal resin.** (polyacetal). A polyoxymethylene thermoplastic polymer obtained by ionically initiated polymerization of formaldehyde +  $CH_2$  to obtain a linear molecule of the type  $-O-CH_2-O-CH_2-CH_2-$ . Single molecules may have over 1500  $-CH_2-$  units. As the molecule has no side chains, dense crystals are formed. Acetal resins are hard, rigid, strong, tough, and resilient; dielectric constant 3.7; dielectric strength 1200 volts/mil, 600 volts/mil (80-mil); dimensionally stable under exposure to moisture and heat, resistant to chemicals, solvents, flexing, and creep, and have a high gloss and low friction surface. Can be chromium-plated, injection-molded, extruded, and blow-molded. Not recommended for use in strong acids or alkalis. They may be homopolymers or copolymers.

Properties: D 1.425; thermal conductivity 0.13 Btu ft/(hr)(sq ft) (degree F); coefficient of thermal expansion  $4.5 \times 10^{-5}$ /degree F; specific heat 0.35 Btu/(lb)(degree F); water absorption 0.41%/24 hour; tensile strength 10,000 psi; elongation 15%; hardness (Rockwell) R120; impact strength (notched) 1.4 ft-lb/inch; flexural strength 14,100 psi; shear strength 9500 psi. Combustible, but slow burning.

Use: An engineering plastic, often used as substitute for metals, as in oil and gas pipes; automotive and appliance parts; industrial parts; hardware; communication equipment; aerosol containers for cosmetics.

See also "Delrin"; "Celcon."

**acetamide.** (acetic acid amine; ethanamide). CAS: 60-35-5.  $CH_3CONH_2$ .

Properties: Colorless, deliquescent crystals with a mousy odor. Soluble in water and alcohol; slightly soluble in ether; d 1.159; mp 80C; bp 223C; refr index 1.4274 (78.3C). Combustible.

Derivation: Interaction of ethyl acetate and ammonium hydroxide.

Grade: Technical; CP (odorless); intermediate; reagent.

Hazard: An experimental carcinogen.

Use: Organic synthesis (reactant, solvent, peroxide stabilizer); general solvent; lacquers; explo-

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